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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/617,813	07/17/2000	Mattias Hyll	1410-695	8288

7590 04/05/2004

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EXAMINER	
CORRIELUS, JEAN B	
ART UNIT	**PAPER NUMBER**
2631	10

DATE MAILED: 04/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/617,813	Applicant(s) HYLL, MATTIAS	
	Examiner Jean B Corrielus	Art Unit 2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,23-25 and 27-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-15,21,23 and 24* is/are allowed.

6)☒ Claim(s) *16-18,25,27-31 and 34-36* is/are rejected.

7)☒ Claim(s) *19,20,32 and 33* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowableness of claims 16-18, 25, 27-31 is withdrawn in view of the previously cited reference to Saito US Patent No. 6,088,401; Limberg US Patent No. 6,496,229; Scarpa et al US patent No. 5,673,293 . Rejections based on the cited reference(s) follow.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 25, 30, 31 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Lawrence et al US patent No. 5,694,419.

Lawrence et al discloses an apparatus comprising an A/D converter for sampling a received signal including a known signal see col. 4, lines 23-25 and col. 9, line 25; an equalizer 560 for equalizing the sampled signal inherently includes a first and second mechanism to process the real and imaginary components, respectively, (see for instance Patent No. 5,414,732 for the structure of an equalizer); a timing control unit 580 for controlling the A/D converter, wherein the equalized real component of the received signal (known

signal) is used to control the control unit see col. 9, lines 16-28; as per the limitations "wherein the first and second mechanisms permit simultaneous equalization of the known signal by the equalizer and the recovery of a timing signal from the known signal at the timing recovery unit" note that such limitation is inherent in Lawrence since the mechanisms process the signal in parallel, such process has to be done in parallel.

As per claim 30, the real component of the know signal is used to control the timing unit 580 see fig. 5.

As per claim 31, the first and second mechanisms are inherently decoupled since they are independent from each other.

As per claim 35 the timing unit 580, inherently includes timing to synchronize the transmitter with the receiver in order to allow transmitter to communicate with the receiver.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al. in view of Saito US Patent No. 6,088,401.

Lawrence et al discloses every feature of the claimed invention but does not explicitly teach that the equalizer only samples the imaginary component of the

sampled signal not the real component. In the same filer of endeavor, Saito teaches an equalizer 10 for sampling only the imaginary part of a sampled signal not the real component. Given that fact, it would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Lawrence in order to improve signal detection.

6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al in view of Genossar et al US patent No. 6,643,321.

As applied to claim 25 above, Lawrence teaches every feature of the claimed invention but does not explicitly teach that the equalizer is updated using an equalizer coefficient corresponding to the known signal. Genossar et al teaches that the equalizer is updated using an equalizer coefficient corresponding to the known signal. See col. 11, lines 13-18. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in Lawrence so as to ensure that the tap coefficient are properly adjusted to avoid any data lost.

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al in view of Limberg US Patent No. 6,496,229.

As applied to claim 25 above, Lawrence teaches every feature of the claimed invention but does not explicitly teach that the real and imaginary components of the known signal are both equalized using the same equalizer coefficient. Limberg teaches that the real and imaginary components of the known signal are both equalized using the same equalizer coefficient see col. 24, lines 25-30. Given that fact, it would have been

obvious to one skill in the art to incorporate such a teaching in Lawrence so as to reduce the complexity of the system.

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al.

As applied to claim 25 above, Lawrence teaches every feature of the claimed invention but does not explicitly teach that the known signal is pilot tone. However, using the pilot tone as a known signal is old and well known in the art. Given that fact, it would have been obvious to one skill in the art to transmit in receive pilot tone in Lawrence in order to recover and tract sampling rate.

9. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawrence et al in view of Hyll US patent No. 6,005,893.

As applied to claim 25 above, Lawrence teaches every feature of the claimed invention but does not explicitly teach that the receiver is a DMT receiver employing and that the equalizer is a frequency domain equalizer. In the same field of endeavor Hyll teaches a DMT receiver fig. 4 employing plural subcarriers to convey information and a frequency domain equalizer 58 . Given that fact, it would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Lawrence et al in order to enhance system performance by compensating for phase and magnitude of the pilot tones.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scarpa et al US patent No. 5,673,293 in view of Saito US Patent No. 6,088,401.

Scarpa et al discloses an apparatus comprises an A/D converter 114 for sampling a received signal including a known signal see col. 11, lines 1-5; an equalizer 252 for equalizing the sampled signal; a timing control unit 240 for controlling the A/D converter 114 wherein the real component of the known signal is used to control the unit timing unit 240 see fig. 2 and col. 11, lines 1-5. however, Scarpa does not teach that the equalizer only samples the imaginary component of the sampled signal not the real component. In the same filer of endeavor, Saito teaches an equalizer 10 for sampling only the imaginary part of a sampled signal not the real component. Given that fact, it would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Scarpa in order to improve signal detection.

As per claim 18, the control unit is a VCO 242 and the real component is filtered by filter element 222.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Scarpa et al US patent No. 5,673,293 in view of Saito US Patent No. 6,088,401 and further in view of et al in view of Hyll US patent No. 6,005,893.

As applied to claim 16 above, Scarpa and Saito disclose the invention substantially as claimed but does not explicitly teach that the receiver is a DMT receiver employing plural subcarriers to convey information and that the equalizer is a frequency domain equalizer and that the receiver further comprising a S/P converter for converting output of the A/D converter to parallel time domain samples corresponding to plural subcarriers; and a fast Fourier transform processor transforming the parallel time domain samples into parallel frequency domain samples which are provided to the frequency domain equalizer. In the same field of endeavor Hyll teaches a DMT receiver fig. 4 employing plural subcarriers to convey information and a frequency domain equalizer 58 and that the receiver fig. 4 further comprising a S/P converter 54 for converting output of the A/D converter 50 to parallel time domain samples corresponding to plural subcarriers; and a fast Fourier transform processor 56 transforming the parallel time domain samples into parallel frequency domain samples which are provided to the frequency domain equalizer 58. Given that fact, it would have been obvious to one skill in the art at the time of the invention to incorporate such a teaching in Scarpa and Saito in order to enhance system performance.

Allowable Subject Matter

13. Claims 1-15, 21, 23, 24 are allowed.

14. Claims 19, 20, 32 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is (703) 305-4023. The examiner can normally be reached on Monday-Thursday from 7:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour, can be reached on (703) 306-3034.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

Jean B. Corrielus
Primary Examiner
TC-2600 4/1/04